VMS Factory Installed Software

User Guide

Order Number: EK-A0377-UG.003

October 1991

This guide describes how to use VMS Factory Installed Software.

Revision/Update Information: This is a revised guide. It supersedes the *Guide to Using VMS Factory Installed Software* (Order Number EK-A0377-UG.002)

Operating System and Version: VAX/VMS V5.4-3 and higher.

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Maynard, Massachusetts

October 1991

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This document was prepared using VAX DOCUMENT, Version 2.0.

Contents

Preface

This guide describes how to use the **VMS** Factory Installed Software (FIS) that is shipped with some VAX/VMS systems.

Audience

This guide should be used by the owner of a VAX/VMS system equipped with VMS FIS. If you are not familiar with VAX/VMS, you might need help from your system manager or network coordinator.

Sources of Help

Consult your **network coordinator** if you intend using the system as part of a computer **network**. DIGITAL consultancy services are also available for advice on setting up new computer networks or on the configuration of more complex networks.

Structure of this Guide

This guide contains four chapters, an appendix, and a glossary.

- Chapter 1 introduces VMS FIS and mentions alternative **boot devices**.
- Chapter 2 describes how to use VMS FIS on a standalone system.
- Chapter 3 describes how to use VMS FIS on a system that is a member of a simple computer network or a simple **VAXcluster** of communicating VAX/VMS systems.
- Chapter 4 describes how to use VMS FIS on a system that is part of a more sophisticated and complex VAXcluster.

Appendix A describes how to **boot** the system from devices other than the **system disk**.

The Glossary defines the technical terms used in this guide.

Conventions

The following conventions are used in this guide:

Convention	Meaning
BOLD	Bold print identifies user input when used in examples and system displays. Terms that are explained in the glossary are also shown in bold print when they are first used.
UPPERCASE	Commands and key names used within text are shown in uppercase.
`Welcome to VAX/VMS`	System displays used as examples are shown in monospace type.
Italics	The names of other manuals referenced are shown in *Italics*.

1 Introduction

Your system has VMS Factory Installed Software (FIS). When compared with the standard installation of the VMS operating system from a distribution kit, VMS FIS allows you to use VMS in a shorter time after installing the system hardware. This software is loaded onto the system disk before it is shipped. You can use VMS FIS, with the appropriate software licenses, to operate a wide range of computer systems:

- Large computers suitable for centralized data processing by large organizations
- Medium-sized computers suitable for centralized data processing by smaller organizations, or for departmental use within large organizations
- Small computers or **workstations** used by one user or a limited number of users

1.1 Customizing VMS FIS

You must modify VMS FIS to accommodate customized passwords and system environment particulars such as the default windowing system, cluster information and so on. You make these modifications during the startup procedure, executed when VMS FIS is started for the first time.

The customization procedure involves some of the same steps as installation from a standard VMS distribution kit. However, it is much quicker than the installation from a kit, and does not require as much knowledge of kit contents, device configurations, or other installation information.

If you have not installed VMS from a distribution kit, you should read this manual to ensure that you understand the steps in the procedure. You might need the assistance of a colleague, system manager or network coordinator who has experience of VMS installation.

If you have limited knowledge of VMS, you should begin by using VMS FIS on a standalone system (see Chapter 2). You can upgrade the VMS FIS standalone system to run in a simple or complex network at a later stage. By upgrading the system at a later stage, you avoid risking the failure of the installation due to entering incorrect data.

1.2 Steps in Starting the System

This section describes how to start a system using VMS FIS.

To start the system, you must understand how to do the following:

- Use the console sub-system
- Identify the system configuration:
  - Identify the disk containing VMS FIS
  - Identify, on some systems, the processor that you must use to start VMS FIS
- Set the system defaults before using VMS FIS for the first time
- Select, on some systems, suitable unit numbers for disks
- Start an FIS system for the first time
- Use VMS FIS after customization

This guide directs you to the relevant system documentation, or to the relevant VMS installation and operations manual for further information.

You must follow different procedures depending on whether the system includes one processor, or more than one. If the system includes one processor, you can select different procedures, depending on whether you intend using the system with other computers in a network or not.

If you have not previously configured a system using VMS FIS, Digital recommend configuring the system as a standalone system initially. If there is more than one processor in the system, select one processor to start as a standalone system.

After configuring the system (or single processor) as a standalone system, you can upgrade the standalone system to communicate with other processors, or other independent systems, in a network.

The following chapters describe configuring the system in the following ways:

- As a standalone system with one processor, that does not communicate with other systems

- As an independent system communicating with other VMS systems in a simple computer network or VAXcluster
- As a system communicating with many other VAX/VMS systems, or other systems, in a more complex VAXcluster network with distributed resource sharing and sophisticated disk management

You can upgrade the system from a single system, to an independent system communicating in a simple network or VAXcluster, or to a system in a more complex VAXcluster. VMS software includes command procedures that configure the system as a member of a network. You must have the appropriate software licenses and **Product Authorization Keys (PAKs)** to use these command procedures.

Digital supplies these software licenses and PAKs. They may be packaged with the system, or you can obtain them separately, perhaps through a system manager or other individual within your company.

To use VMS command procedures and PAKs, you need some knowledge of computer and network terminology.

1.3 Alternative Boot Devices

You can boot the system from a device other than the system disk, if such a device is available. If a VAXcluster network is already available, you can use the new system by loading software from a **server system** within the existing network. Alternatively, you can load the software from some types of disk accessed through a multihost disk controller. Consult your network coordinator for more information.

See Appendix A for more information on alternative boot devices.

2

Using VMS FIS on a Standalone System

This chapter describes the procedure that you use to boot a standalone system for the first time using VMS FIS. Read this chapter carefully before turning on your system and using VMS FIS.

This chapter contains information on the following topics:

- Setting configuration parameters on **Digital Storage Systems Interconnect (DSSI)** systems with RF-series disks
- Preparing your system for VMS FIS
- Using VMS FIS on a standalone system
- Completing the Installation

If your system does not include RF-series disks with DSSI interfaces, proceed to Section 2.2.

2.1 Setting Configuration Parameters on DSSI Systems with RF-Series Disks

This section describes the following information:

- Selecting a processor for VMS FIS operations
- Setting DSSI device parameters

2.1.1 Selecting a Processor for VMS FIS Operations

In multiprocessor DSSI VAXclusters, you must select one processor that you will use to start VMS. You must start VMS FIS and enter all PAKs before configuring the other processors as VAXcluster members. See the system documentation and the *VMS VAXcluster Manual* for information on defining alternative system root directories and setting the default boot flags that the other processors will use, before configuring the other processors.

2.1.2 Setting DSSI Device Parameters

On certain configurations, you must set the parameters for the DSSI devices before running VMS FIS. You must set these parameters even if you are using the system as a standalone system.

If you are configuring your system as a cluster with a nonzero allocation class, you must set the allocation parameters for the DSSI devices.

The unit numbers for all DSSI devices connected to a system's associated DSSI buses must be unique. Therefore, when you are using more than one DSSI bus, and the system is using a nonzero allocation class, you must assign new unit numbers to the devices on all but one of the DSSI buses.

See the system documentation for information on setting parameters for DSSI devices.

2.2 Preparing Your System for VMS FIS

You must complete the following procedure before using VMS FIS on the system:

1. Put the system in console mode using one or more of the following steps:
   a. Set the on/off switch to the off (O) position.
   b. On a VAX 4000, set the break enable/disable switch to the enable position (up).
   c. On some larger systems, set the keylock switches to the appropriate positions. See system documentation for more information.
   d. Set the on/off switch on the system to the on (|) position.
   e. Load the console software from a tape or a disk. This step is necessary only on some larger systems. See the system documentation for more information.

   The system displays its power-up test sequence. If the system is not set to boot, or to prompt for a boot device, it displays the console prompt (>>>). If the system does not display the console prompt, follow these steps:

   f. If the system is a VAX 6000, set the upper keylock switch to ENABLE and the lower keylock switch to HALT. Press the system RESTART button to run the self-tests again.
   g. On other systems, press the halt button one or more times.
2. Identify the VMS FIS system disk. Your system disk is one of the following:
   - A SCSI (Small Systems Computer Interface) disk.

     The SCSI system disk in a MicroVAX 3100 or VAXstation is called DKA300, that is, a disk on SCSI bus A with a SCSI ID of 3.
   - A DSA (Digital Storage architecture) disk.

     The DSA system disk in a larger system is called DUA0 or DU0.
   - A DSSI disk.

     There are two naming conventions for DSSI disks on VAX 4000 systems, as follows:

     – The embedded DSSI host adapter is called DI*mu*, where *m* signifies the host adapter (A signifies bus 0, the internal bus; B signifies bus 1, the external bus) and *u* signifies the unit number.

- The KFQSA DSSI host adapter is called DU*cu*, where *c* signifies the mass storage control protocol (MSCP) controller designator (A signifies the first MSCP controller, B signifies the second MSCP controller) and *u* signifies the unit number.

  Typically, if the system disk is in the system enclosure, it is called DIA0. If it is in an expansion box connected to bus 1, it is called DIB0.

For more information on system disks, and commands for checking the system configuration see your system documentation.

See Section 2.5 for more information on VMS FIS system disks on **Hierarchical Storage Controller (HSC)** or DSSI-based disks, or in systems with more than one type of disk controller.

3. Define the system disk as the the default boot device, as follows:

   - On a MicroVAX 3100, enter the following command:

     ```
     >>> SET BOOT DKA300
     ```

   - On a VAX 4000, enter one of the following commands:

     - If the DSSI disk holding FIS is inside the system unit, enter the following command:

       ```
       >>> SET BOOT DIA0
       ```

     - If the DSSI disk holding FIS is in an expansion box connected to Bus 1, for example, an R400X expansion box, enter the following command:

       ```
       >>> SET BOOT DIB0
       ```

     Use the SHOW DSSI command to see what disks are included in the configuration. See the VAX 4000 system documentation for more information.

   - On a VAX 6000 model 400, set the console key switch to the UPDATE position and enter a command similar to the following:

     ```
     >>> SET BOOT DEFAULT DU0
     ```

4. Check the default boot device setting, as follows:

   - On a MicroVAX 3100 system or a VAX 4000 system, enter the following command:

     ```
     >>> SHOW BOOT
     ```

- On a VAX 6000 model 400, enter the following command:

  ```
  >>> SHOW BOOT DEFAULT
  ```

Repeat step 3 if you have not set the default boot device correctly.

5. Enter a command similar to the following to set the default boot flag to 00000000:

   ```
   >>> SET BFLG 00000000
   ```

   The boot flag is an 8-digit hexadecimal number. The value of the boot flag determines how the system uses the system disk during startup. If you set the boot flag incorrectly, the system may not enter console mode automatically, and may not re-boot correctly during VMS FIS customization.

   See your system documentation for further information on setting the default boot flags on your system.

6. Enter a command similar to the following to check the default boot flag setting:

   ```
   >>> SHOW BFLG
   ```

   See your system documentation for further information on checking the default boot flag setting on your system.

   Repeat step 5 if you have not set the default boot flag correctly.

7. Set the default recovery action, as follows:

   - On a MicroVAX 3100 system, enter the following command:

     ```
     >>> SET HALT 3
     ```

   - On a VAX 6000 model 400 series system, move the lower keylock switch to the HALT position.
   - On VAX 4000 systems, the default recovery action is halt, so this step is not necessary.
   - On other systems, see the system documentation for information on setting the default recovery action.

8. Enter a command similar to the following to check the default recovery action setting:

   ```
   >>> SHOW HALT
   ```

See your system documentation for information on checking the default recovery action on your system.

Repeat step 7 if you have not set the default recovery action correctly.

9. Disable remote trigger and network listener, if possible, as follows:

   On a MicroVAX 3100 system, enter the following commands:

```
>>> SET MOP 0
>>> SET TRIG 0
```

   Your system may not provide the option of disabling the remote trigger and network listener. See your system documentation if you do not know whether these options are available. If the options are not available, proceed to Section 2.3.

10. Enter commands similar to the following to check the remote trigger and the network listener states:

```
>>> SHOW MOP
>>> SHOW TRIG
```

    See your system documentation for information on checking the remote trigger and the network listener states on your system.

    Repeat step 9 if you have not set the default remote trigger and network listener correctly.

2.3 Using VMS FIS on a Standalone System

The following procedure describes how to use VMS FIS to configure your system as a standalone system:

1. If you have set the default boot device (see Section 2.2), enter the following command:

   ```
   >>> BOOT
   ```

   See your system documentation for more information on the BOOT command.

   The system displays start-up and other routine messages.

   Note

   Ignore any messages warning you that DEC VAX-VMS use is not authorized. If you have a synchronous-line communications interface installed in your system ignore any messages warning you that the driver software for the interface is not installed. See Section 2.5 for more information on installing the driver software.

   The system display is similar to the following:

   ```
   VAX/VMS Version V5.4-3       Major version id = 1 Minor version id = 0

   Modifying Factory Installed Software for Customer Use
   ======================================================

   %STDRV-I-STARTUP  VMS Startup begun at 23-OCT-1991  15:50:00
   %SET-I-NEWAUDSRV, identification of new audit server process is 00000087
   %LICENSE-F-EMTLDB, license database contains no license records

       .
       .
       .
   ```

2. Enter Y at the following prompt:

   ```
   Beginning factory-installed software configuration dialogue.

   * Do you want to enter Customer's cluster and password information (Y/N)?) Y
   ```

   This reply allows you to enter the necessary information about passwords. You can also enter information about clusters if you intend to use the system in a VAXcluster with the necessary software licenses. You can, if you prefer, delay entering cluster information until a later stage.

3. Enter Y or N at the following prompt, depending on whether the system time displayed is correct:

```
The system time is dd-mmm-yyyy   hh:mm:ss:ss

Is this correct? (Y/N) N
```

If you enter N, the systems prompts you to enter the correct time and date, and then to confirm your entry.

4. Enter N at the following prompt, because this node will not be a cluster member:

```
Will this node be a cluster member (Y/N)? N
```

5. Enter Y or N at the following prompt:

```
Do you want DECwindows as the default windowing system? (Y/N)? Y
```

- Enter Y if you want DECwindows as the default windowing system.
- Enter N if you want do not want DECwindows as the default windowing system.

See Section 2.5.3 for more information on windowing systems.

6. Enter account passwords in response to the following prompts:

Note

In the following example, PANCAKES, BRATWURST, and ZIRHUMBA are sample passwords. You should enter your own unique passwords.

```
* Enter password for account SYSTEM:  PANCAKES

* Re-enter for verification:    PANCAKES
%UAF-I-MDFYMSG, user record(s) updated
%VMS-I-PWD_OKAY, account password for SYSTEM verified

* Enter password for account SYSTEST:   BRATWURST

* Re-enter for verification:  BRATWURST
%UAF-I-MDFYMSG, user record(s) updated
%VMS-I-PWD_OKAY, account password for SYSTEST verified

* Enter password for account FIELD:   ZIRHUMBA

* Re-enter for verification:   ZIRHUMBA
%UAF-I-MDFYMSG, user record(s) updated
%VMS-I-PWD_OKAY, account password for FIELD verified

  The SYSTEST_CLIG account will be disabled.   You must re-enable
  it before running UETP but do not assign a password.
```

The procedure verifies the passwords and rejects any that can be easily guessed. In the previous example, status messages similar to the following confirm that the system has verified the passwords:

```
%VMS-I-PWD_OKAY, account password for SYSTEM verified
```

7. Enter N in response to the following prompt:

```
    If you have Product Authorization Keys (PAKs) to register, you may
    register them now.

* Do you want to register any Product Authorization Keys? (Y/N):  N
```

If you are familiar with the PAK registration process, you can enter Y in response to this prompt, and register any PAKs supplied with your system.

If you are unfamiliar with the PAK registration process, you should enter N. You can start your system in a limited way, and register your PAKs later. See Section 2.4.1 for further information on registering PAKs.

The system now displays messages reminding you to do the following:

- Register PAKs
- Back up the system disk
- Tailor the system disk

The messages appear as follows (press the return key when prompted to do so):

```
******************************************************************************

    After the system has rebooted you must register any Product
    Authorization Keys (PAKs) that you have received with this kit.
    You may register these PAKs by executing the following procedure:

        $ @SYS$UPDATE:VMSLICENSE

    See the VMS License Management Utility Manual for any additional
    information you may need.
******************************************************************************

******************************************************************************

    After the installation finishes, you should do some or all of the
    following tasks:

*   Type the RETURN key to continue:

    You should

    o  BACKUP THE SYSTEM DISK - This work is described in the
       "VMS Installation and Operations Manual" or "Owner's Manual" for
       your system.

*   Type the RETURN key to continue:

    You may want to

    o  TAILOR THE SYSTEM DISK - You may want to review the files provided
       on this disk.   If you find there are files you want to remove from
       the system disk (TAILOR OFF), use the following utilities to perform
       the desired tailoring.

       VMS tailoring:              $ RUN SYS$UPDATE:VMSTAILOR
       DECwindows tailoring:       $ RUN SYS$UPDATE:DECW$TAILOR
       DECwindows Motif Tailoring  $ RUN SYS$UPDATE:DECW$MOTIF_TAILOR

       See your Factory Installed Software Information Sheet for details
       of what has been loaded on your system disk

*   Type the RETURN key to continue:
```

You must complete this procedure before backing up or tailoring the system disk. Section 2.4, Completing the Installation, contains information on these procedures.

The system shuts itself down and then reboots automatically from the default boot device. This process takes several minutes. The system displays a series of information messages:

```
SHUTDOWN -- Perform an Orderly System Shutdown
    .
    .
    .
VAX/VMS Version V5.4-3     Major version id = 1 Minor version id = 0
    .
    .
    .
SYSTEM         job terminated at 23-OCT-1991 14:47:28.34
```

8. Press RETURN

9. Log into the SYSTEM account as follows:

```
Welcome to VAX/VMS

USERNAME: SYSTEM
PASSWORD: PANCAKES

%LICENSE-I-NOLICENSE, no license is active for this software product
%LOGIN-LOGOPRCON, login allowed from OPA0:

          Welcome to VAX/VMS V5.4-3
```

   If you enter the incorrect password, the system displays the following message:

```
User authorization failure
```

10. Repeat step 9 if you have entered the wrong password. If you forget your password, follow the instructions for breaking into the system given in the *Guide to Setting Up a VMS System*.

2.4 Completing the Installation

To complete the installation, you must perform the following tasks:

- Register PAKs
- Back up the system disk
- Tailor the system disk
- Customize and test the system

2.4.1 Registering PAKs

You must register PAKs before you can use network software, application software, or any commands other than the most basic. To register PAKs, enter the following command:

```
$ @SYS$UPDATE:VMSLICENSE
```

See the *VMS License Management Utility Manual* for more information on registering PAKs.

2.4.2 Backing Up the System Disk

You should back up the system disk so that you can recover the operating system software in the event of damage or failure. You may need to use removable, bootable, media such as tape cartridges, to hold the backup data and the recovery software. In this case, you may need an external tape drive to write to and read from tape cartridges. Some systems may perform the recovery process by booting as a **satellite** within a VAXcluster.

See the *VMS Installation and Operations Manual* for more information on backing up the system disk.

Consult your network administrator for information on VAXcluster operations for backup and recovery.

2.4.3 Tailoring the System Disk

If you have limited disk storage capacity in your system, you can remove unwanted files from the system disk using the following disk tailoring procedures:

- VMSTAILOR
- DECW$TAILOR
- DECW$MOTIF_TAILOR

VMSTAILOR allows you to remove unwanted system files from the system disk. DECW$TAILOR allows you to remove unwanted DECwindows files from the system disk. DECW$MOTIF_TAILOR allows you to remove unwanted DECwindows Motif files from the system disk.

See the *VMS Installation and Operations Manual* for more information on tailoring the system disk.

2.4.4 Customizing and Testing the System

The *VMS License Management Utility Manual* and the *VMS Installation and Operations Manual* include information on customizing and testing your system.

This customization can include setting up **batch processing queues** and printer queues to manage processing on the standalone system.

It is possible to include the system as part of a network, if that is necessary, at a later stage. Including the system in a VAXcluster network brings many advantages. You can transfer data between systems, share disks, and organize batch processing and printer queues to share other resources.

You can use the VMS command procedures NETCONFIG.COM and CLUSTER_CONFIG.COM to include the system in a network, provided that you have the appropriate software licenses and PAKs. See the *VMS VAXcluster Manual*, the *Guide to DECnet–VAX Networking* and the *VMS Networking Manual* for more information.

2.5 Additional Information

This section contains additional information on the following:

- VMS FIS on HSC-based or DSSI-based disks
- Synchronous line driver software
- Windowing systems

2.5.1 VMS FIS on HSC-Based or DSSI-Based Disks

Disks that are accessed through a **multihost disk controller**, such as a **Hierarchical Storage Controller (HSC)** or **DIGITAL Storage Systems Interconnect (DSSI)** controller, are identified by a controller **node** name as a prefix to the device name. You set up the Controller (HSC or DSSI) node names in console mode. See your system *Owner's Manual* or your multihost disk controller *Owner's Manual* for information on setting up the controller node name.

In systems with an RF-series **Integrated Storage Element (ISE)**, the disk containing FIS is called DIA0 or DIB0. See Section 2.2 for more information on RF-series disk names.

In systems with an RA90 system disk and a HSC70 multihost disk controller, the disk containing FIS is called *<node_name>*$DUA0, where *<node_name>* denotes the HSC node name.

VMS FIS on Systems with More than One Type of Disk Controller

Your system may have more than one type of disk controller. In this case, VMS FIS is loaded on the disk with drive number zero, of the type which has the highest storage capacity in the system.

2.5.2 Synchronous Line Driver Software

If a synchronous-line communications interface is installed in your system, a warning message may be displayed indicating that the driver software for the interface is not loaded. The synchronous-line driver software is supplied as a separate product, and you can install it after booting the **operating system**. The warning message about the file ZSDRIVER.EXE does not affect the correct operation of the other system components.

2.5.3 Defining a Default Windowing Environment

You can redefine your system's default windowing environment at any time. If for example you answered N when asked whether you wanted DECwindows as your default windowing environment, you can choose DECwindows at a later stage.

To do this, you must modify the VMS System Generation Parameter, WINDOW_SYSTEM, generate a new set of bootstrap parameters, and boot the system again.

See the *Factory Installed Software Information Sheet* for information on the type of windowing software installed on the system disk. You can load other windowing systems from the distribution media if you prefer.

See the *VMS Installation and Operations Manual*, the *Guide to Setting up a VMS System*, the *VMS System Generation Utility Manual*, or the installation documentation for the other types of windowing software for further details.

3

Using VMS FIS on a Simple Network or VAXcluster

You can use a system equipped with VMS FIS in a simple computer network where data is communicated by copying files from one computer to another. You can also use it in a VAXcluster where different computers in the same network can share disks and other resources. You can also set up shared batch and print queues on each separate VMS system.

This chapter contains information on the following:

- Prerequisite network information
- Connecting your system to a DECnet network
- Connecting your system to a VAXcluster network
- Running DECwindows or DECwindows Motif applications for your system, displaying output on any selected workstation in the network
- Running VWS applications for your system, displaying output on any VAX workstation in a VAXcluster

3.1 Prerequisite Network Information

The information required to complete the procedures described in the following sections is identical to that required when using a standard software distribution kit to set up a VMS system as a network node or VAXcluster node. If you have not previously set up a VMS system in a simple network or VAXcluster, or if you have not used windows applications on a choice of workstations, you may need to ask a colleague, system manager, or network coordinator for assistance.

When setting up a VMS system as a member of a DECnet network, you must define a unique node name and a unique valid DECnet network address for the system. If this is a new network, you may also need to enter router information. You must also enter the appropriate PAK before using the network.

When setting up a VMS system as a VAXcluster member, you may not need to use the VMS Factory Installed Software. You could use the software already loaded on a VAXcluster server machine, and use the system disk in your system for application data.

If you want to use this system, with VMS Factory Installed Software, as a VAXcluster server, you must supply the following:

- A unique name for the system
- A unique valid DECnet network address
- Information on whether or not Ethernet is used for communications
- A unique cluster group number
- A valid cluster password
- Some details on the disk configuration to be served to other machines in the VAXcluster.

You must also enter an appropriate PAK before using the system in a VAXcluster.

3.2 Simple Networks

The following procedure describes how to use VMS FIS to include the system in a simple computer network, without VAXcluster sharing of disks:

1. Set up the VMS FIS as described in Chapter 2, Using VMS FIS on a Standalone System.
2. Enter the appropriate PAK for network operation, using the command procedure SYS$UPDATE:VMSLICENSE.COM.
3. Use the SYS$MANAGER:NETCONFIG.COM command procedure to configure the system as a member of a DECnet network.
4. Use the SYS$MANAGER:STARTNET.COM command procedure to start network processing after connecting the system to the network.

Consult your network coordinator and see the *Guide to DECnet–VAX Networking* and the *VMS Networking Manual* for more information.

3.3 VAXcluster Networks

The following sections describe the following information:

- Benefits of VAXcluster networks
- Including your system in a VAXcluster network

3.3.1 Benefits of VAXcluster Networks

VAXcluster networks offer a wide range of processing options.

You can configure complex VAXclusters to set up batch and print queues that are shared between different systems in the same network. This distributes the processing load and printer resources across large numbers of computers. You can also configure sophisticated disk processing to support selective management of disks within larger VAXclusters.

These more complex VAXcluster configurations are outside the scope of this introductory guide. For a brief description of complex VAXcluster configurations see Chapter 4, Using VMS FIS in Clustered Environments. Chapter 4 also references associated documents that contain more information on setting up complex VAXclusters.

3.3.2 Including Your System in a VAXcluster Network

The following procedure describes how to set up VMS FIS for use as a **server** in a simple VAXcluster network. The following procedure applies to a typical system configuration. You can modify this configuration later, if required, using standard VMS procedures.

1. Enter the relevant commands given in Section 2.2.
2. Perform steps 1, 2 and 3, listed in Section 2.3.
3. Enter Y in response to the following prompt:

```
Will this node be a cluster member (Y/N)?  Y
```

Note

- Make sure that you enter the correct node name. You can correct an incorrect node name later, but the time saving from using VMS Factory Installed Software is reduced.
- The DECnet node name may be from 1 to 6 alphanumeric characters in length and may not include dollar signs or underscores.

4. Choose a DECnet node name, for example JUPITR, and enter it in response to the following prompt:

```
What is the node's DECnet node name? JUPITR
```

5. Enter the DECnet node address, for example 2.2, in response to the following prompt:

```
What is the node's DECnet node address? 2.2
```

6. Enter Y in response to the following prompt if you intend using **Ethernet** for cluster communications between any machines within the cluster:

```
Will the Ethernet be used for cluster communications (Y/N)?  Y
```

Note

The cluster group number must be in one of the ranges, 1 to 4095 or 61440 to 65535.

7. Enter the cluster group number, for example 3959, in response to the following prompt:

```
Enter this cluster's group number:  3959
```

Note

- The password shown next is a sample password. You should enter your own unique password. Check with your network coordinator to see if there is an existing password for this cluster.

- The cluster password may be from 1 to 31 alphanumeric characters in length and may include dollar signs and underscores.

---

8. Enter the cluster password in response to the following prompt:

```
Enter the cluster's password:  MICROCOSM
```

9. Verify the cluster password by entering it again in response to the following prompt:

```
Re-enter the cluster's password for verification:  MICROCOSM
```

The system displays several prompts that ask about the type of VAXcluster to which you are connecting. The responses shown are sample responses. You might want to answer differently, depending on the configuration of your VAXcluster. See your network coordinator if you are unsure of the answers to these prompts.

10. Enter Y to the following prompt if you intend using your system as a disk server:

```
Will JUPITR be a disk server (Y/N)?  Y
```

The system displays one of the following prompts, depending on the disk configuration.

11. Enter Y or N as appropriate in response to one of the following prompts:

```
Will JUPITR serve HSC disks (Y)?  N
```

or

```
Will JUPITR serve RFxx disks (Y)?  N
```

You must enter Y to the latter prompt if the system disk is an RFxx disk (DIA0).

Note

You can easily change the response you give here by modifying VMS System Generation Parameters, regenerating a parameter set and booting the VMS system again. See the *Guide to Setting Up a VMS System*, the *VMS System Generation Utility Manual* and the *VMS VAXcluster Manual* for details of the small number of disk server

parameters that must be changed, their location, and the regeneration process.

---

12. Enter your node's ALLOCLASS parameter in response to the following prompt, (in the following example the ALLOCLASS parameter is 0, you must use the value suitable for your system):

```
Enter a value for JUPITR's ALLOCLASS parameter:  0
```

    For systems in a multihost DSSI VAXcluster configuration, you must assign the same allocation class to each system and ISE shared on common DSSI busses. The allocation class must be different from that of other systems and hierarchical storage controllers (HSCs) in a cluster.

    Each ISE device served to a cluster must have a non-zero allocation class that matches the allocation class of the system that will serve the ISE.

13. Enter Y or N in response to the following prompt:

```
Does this cluster contain a quorum disk (Y/N)?  N
```

If DECwindows is installed on the system disk, the system displays a prompt asking if DECwindows should be the default windowing system for this system.

See Section 2.3 for more information. See Section 3.4 for information on using DECwindows in a simple network.

The system then displays prompts asking for the account passwords.

In a VAXcluster network, you can configure queues for printer and batch processing operations to work on other systems in the VAXcluster.

Consult your network coordinator for information on existing queues available in your network.

If you are setting up a new network, see the *VMS VAXcluster Manual* for detailed information on setting up remote printer and batch processing queues.

3.4 Using DECwindows in a Simple Network or VAXcluster

The system may have DECwindows or DECwindows Motif windowing software installed on the system disk. Both of these windowing software products use the X-windows network transport. In this section, the term DECwindows denotes either DECwindows or DECwindows Motif software.

In any DECnet network, you can use non-workstation processors (hosts) to run DECwindows applications over the network, providing that a DECnet link exists between the hosts and workstations.

Usually in a DECnet network, a larger VAX system, with more processing power, acts as the DECwindows host.

A workstation loads DECwindows software if the default windowing environment is set to DECwindows, as described in Section 2.3. By default, the workstation running DECwindows can display only those applications running on that workstation. You can display applications running on another host on your workstation by entering several commands.

To display applications running on other machines, you must authorize network access, using the DECwindows Session Manager's menu, and create network links using the appropriate DCL commands such as SET DISPLAY/CREATE. See the *VMS DECwindows User's Guide* for more information.

In a Local Area VAXcluster, any machine can operate as a DECwindows application host, even if it is not a boot node processor in the LAVC. However, if an application host is also a boot node processor, you can use it to boot software from its system disk onto satellite workstations. This saves disk storage space.

You can also install a different optional windowing software, VAX Workstation Software (VWS), on an LAVC boot node for use by workstations in the Local Area VAXcluster. The LAVC boot node can load VWS software to workstations which have their default windowing system set to VWS, while at the same time providing a DECwindows service to other workstations which have their default windowing system set to DECwindows. VWS is not included with VMS Factory Installed Software but you can purchase it as a separate product.

4

Using VMS FIS in Clustered Environments

This chapter contains information on using your system with VMS Factory Installed Software, in a complex network configuration.

The following list gives examples of complex configurations:

- Two or more processors sharing a single system disk
- Configurations with separate disk allocation class services
- Configurations with quorum disk information
- Networks with printer queues shared between several machines
- Networks with batch processing queues shared between several machines

When configuring a complex network, you may need to enter the following information:

- Different boot default flag settings
- Valid variations of disk allocation class
- Quorum disk information for the network
- Valid variations of queue names
- Product Authorization Keys (PAKs), required before you can complete some parts of the customization procedure

You can customize the VMS FIS on your system to run in a complex network. There are some savings in time compared to the time it takes to load software from a standard distribution kit. You can also upgrade customized VMS FIS for a simple network, to run in a complex network. The procedures to do this, however, are outside the scope of this publication.

See the *VMS VAXcluster Manual*, the *Guide to DECnet–VAX Networking* and the *VMS Networking Manual* for more information on setting up VMS systems as members of more complex computer networks, or upgrading VMS systems to run in more complex networks.

A

Alternative Software Load Devices

This appendix describes how to boot the **operating system** software from a device other than the system disk.

The operating system software can reside in one of the following places:

- On a disk in the system unit
- On a hard disk in an expansion box
- On a compact disc
- On a hard disk attached to a remote system configured to serve satellite systems within a **Local Area VAXcluster (LAVC)** or **Mixed Interconnect (MI)** VAXcluster
- On a hard disk attached to a multihost disk controller such as an HSC or DSSI controller

You can configure the system to load software from one or other of these locations by **default**, while still allowing the system to select software from other locations.

You can also configure the system to load software automatically from one or other of these locations when the system is powered on or after a system crash.

The selection of the default boot device and default recovery action is described in the system documentation.

Enter the following command to boot the system from a device other than the system disk:

```
>>> BOOT device_name
```

Table A–1 gives examples of possible device names and their corresponding devices.

Table A–1 Device Name Examples

Device Name	Device
DUA1	An additional DSA hard disk, for example an RA92 disk
DKB300	An additional SCSI hard disk, for example an RZ57 disk in an expansion box on a second SCSI interface
DIB2	An additional DSSI disk on the external bus, an RF-series disk for example.
DUA1	An additional RF-series DSSI disk on the first KFQSA controller.
DU1	An additional DSA hard disk on a local controller in a Multiprocessor, multiple-bus system using the default /XMI and /BI values, for example an RA92 on a KDB50 controller on a VAX 6000 model 400 system.
ESA0	A remote boot server system accessed through the local system's DESVA network interface, for example the Ethernet adapter on a MicroVAX 3100 system.
ET	A remote boot server system accessed through the local system's DEBNA network interface using default /BI and /XMI values, for example the Ethernet adapter in a VAX 6000 model 400 system.
EZA0	A remote boot server system accessed through the Ethernet adapter on a VAX 4000 system.

See the system documentation for details on configuring multihost disk controller node names, access paths, and device names, or for details of specifying device controller names in multiprocessor, multiple-bus systems.

See the compact disc drive documentation for details of software loading from compact disc.

Glossary

ALLOCLASS parameter

The ALLOCLASS parameter determines the device allocation class for the system. The device allocation class is used to derive a common lock resource name for multiple access paths to the same device.

backup process

The process of making backup copies of the data stored on your disk so that you can recover that data after an accidental loss. You make backup copies on tape cartridges or on another disk.

batch queue

A series of tasks that the computer processes in a certain order, without user interaction.

boot

Short for bootstrap. Bringing a fresh operating system into memory is called booting.

boot device

The memory device that holds the operating system.

boot node

The management center for the cluster and its major resource provider.

CI

See computer interconnect.

CI VAXcluster

A VAXcluster that uses Computer Interconnect for all communications.

cluster

A group of computers networked together that share disk storage, application programs, and other computer resources. Also called a VAXcluster.

command procedure

A file containing commands and data that the command interpreter can accept in lieu of the user's typing the commands individually on a terminal.

computer interconnect

An interconnect used to support communication between VAX processors in a CI or MI VAXcluster.

DECnet

DIGITAL networking software that runs on nodes in both local and wide-area networks.

DECwindows

Digital's workstation management product, a superset of the industry-standard X-Window System. It can be used to run windowing applications efficiently on single workstations, or in distributed processing networks of workstations and non-workstation systems.

default

A value or setting that in most cases is normal or expected.

device name

The name by which a device or controller is identified in the system.

Digital storage architecture

A product architecture which supports efficient generalized control of both disk and tape storage products. It includes optimized controller operating protocols. A framework for an expanding group of mass-storage products and intelligent controllers.

Digital storage systems interconnect

An interconnect technology used for efficient management of integrated disk storage products shared by small systems. DSSI is a member of the DSA product "family".

disk server

A hardware system designed to provide operating system and data storage for other users.

DSA

See Digital storage architecture.

DSSI

See Digital storage systems interconnect.

Ethernet

A type of local area network based on Carrier Sense Multiple Access with Collision Detection (CSMA/CD).

hierarchical storage controller

A controller that enables cluster nodes to share DSA disks. Because the HSC is an intelligent controller, it optimizes physical disk operations.

HSC

See hierarchical storage controller.

integrated storage element

A disk storage device integrating a dedicated intelligent controller and an integral Winchester disk drive or drives, together with the performance and flexibility of the DSSI.

ISE

See integrated storage element.

KFQSA DSSI host adapter

A Q–bus to DSSI adapter that allows you to connect DSSI devices to Q–bus backplanes.

LAN

See local area network.

LAVC

See local area VAXcluster.

local area network

A high-speed communications network that covers a limited geographical area, such as a section of a building, an entire building, or a cluster of buildings. It is a privately owned communication network whose speed is upward of 1 megabit-per-second.

local area VAXcluster

A group of two or more computers connected by an Ethernet cable. In a LAVC, one or more computers serves the other computers; they are required to start the other computers and manage the resources that they share.

mass storage control protocol

MSCP defines a set of rules and conventions for communications with a family of mass storage controllers designed by Digital.

MI VAXcluster

A Mixed-Interconnect VAXcluster, where some processors communicate using CI and some communicate using Ethernet in a Local Area Network.

Motif

Motif is the industry standard Open Software Foundation's graphic user interface. DECwindows Motif incorporates this interface as the design center for DECwindows applications.

MSCP

See Mass Storage Control Protocol

multihost disk controller

A disk controller which can be accessed simultaneously by two or more central processor units.

multiprocessor system

A system that can be configured to hold multiple central processor units.

network

A group of individual computer systems that are connected by communications lines to share information and resources.

network coordinator

The network coordinator manages the network, assigns unique node names and addresses for each system on the network, and provides administrative assistance to network users.

network listener

If the network listener is enabled, along with the remote trigger, the system manager can tell the server to boot the satellite systems in the cluster from the server console without having to go to each satellite and boot it manually.

node

An individual information-processing unit, such as a computer, workstation, or peripheral device, that is connected to a network. A node is an end point to any branch of a network or a junction common to two or more branches.

nonvolatile random-access memory (RAM)

Random access memory that is not lost when the system is powered down. When the system is powered down, the NVR is powered from a rechargeable battery within the system unit.

NVR

See nonvolatile RAM.

operating system

A collection of system programs that controls the operation of the system and allows the user access to data files, input/output devices, and applications programs. The operating system software performs such tasks as assigning memory to programs and data, processing requests, and scheduling jobs.

PAK

See product authorization key.

product authorization key

A PAK is a printed certificate containing information that must be input to the VMS License Management Facility to authorize the VMS user to run a particular software product.

quorum disk

A Quorum disk acts as a virtual node in a system using the quorum scheme. See the *VMS VAXcluster Manual* for further information on quorum disks and the quorum scheme.

recovery action

he recovery action determines how the system acts following power up or an operating system failure.

remote trigger

If the remote trigger is enabled, along with the network listener, the system manager can tell the server to boot the satellite systems in the cluster from the server console without having to go to each satellite and boot it manually.

satellite system

A system that is booted remotely from the system disk on the boot node. A computer system that obtains a specific set of services from a server system.

SCSI

See small computer systems interconnect.

server

Hardware or software that provides a specific set of services to a satellite.

server system

In a VAXcluster, a computer that is used to start the satellite systems and to manage their use of common resources.

single-processor system

A system which is configured to hold only one central processor unit.

small computer systems interconnect

An industry-standard interface for small systems disk and tape storage products.

system disk

The disk that holds VMS Factory Installed Software.

tailoring

Using the VMSTAILOR program to remove the VMS operating system and DECwindows files that you do not need from the system disk.

VAXcluster

A group of two or more computers connected by CI cable and/or Ethernet cable. In a VAXcluster, one or more computers serve the other computers; they are required to start the other computers and manage the resources they share.

VMS

DIGITAL's proprietary operating system.

workstation

A single-user system that offers high performance, high-resolution graphics, and can function in a network environment.

Index

Reader's Comments

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User Guide
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